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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
THOMPSON, TIMOTHY J

ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 07/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/988,051	ISHII ET AL.	
	Examiner	Art Unit	
	Timothy J Thompson	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 42-72* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *See Continuation Sheet* is/are allowed.

6)☒ Claim(s) *42, 45, 46, 49, 60-62, 64, 65, 67, 71/42, 72/42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. *09/172,263* .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Continuation of Disposition of Claims: Claims allowed are 1, 43, 47, 48, 50-59, 63, 66, 68-70, 71/1, 43, 45-47, 56-59, 72/1, 43, 45-47, 56-59.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 42, 45, 46 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mihara(U.S. Patent No. 4,818,083) in view of Mukaiya et al.(U.S. Patent No. 6,178,049).

Regarding claim 42, Mihara discloses, in order from an object side of the zoom lens system: a first lens group having positive refracting power(fig 1, Gr1); a second lens group that has negative refracting power and moves(col 2, lines 57-60) from an object side to an image plane side of said system during zooming from a wide-angle end to a telephoto end of the system(fig 1, Gr2); a third lens group having positive refracting power(fig 1, Gr3); and a fourth lens group that has positive refracting power and is movable during zooming(fig 1, Gr4 and col 2, lines 62-66), wherein: the first lens group comprises two lenses, a negative lens(fig 1, r1-r2) and a positive lens(fig 1, r2-r3), said third lens group consists of three lenses, a positive lens(fig 1, r15-r16), a positive lens(fig 1, r17-r18) and a negative lens(fig 1, r18-r19), v21 < 40 (embodiment 1, r7-r8). Mihara does not disclose the third lens group has at least one aspherical surface therein. However, Mukaiya et al. discloses the third lens group has at least one

aspherical surface therein(table 1, r18). It would have been obvious to one skilled in the art at the time of the invention to place an aspherical surface on a lens in the third lens unit as shown by Mukaiya et al., in the lens system of Mihara, since as shown by Mukaiya et al. aspherical surfaces are commonly placed on lens surfaces in the third lens group of a lens system so as to correct for aberrations.

Regarding claim 45, Mihara discloses, in order from an object side of the zoom lens system: a first lens group having positive refracting power(fig 1, Gr1); a second lens group that has negative refracting power and moves(col 2, lines 57-60) from an object side to an image plane side of said system during zooming from a wide-angle end to a telephoto end of the system(fig 1, Gr2); a third lens group having positive refracting power(fig 1, Gr3); and a fourth lens group that has positive refracting power and is movable during zooming(fig 1, Gr4 and col 2, lines 62-66), wherein: the first lens group has two lenses, a negative lens(fig 1, r1-r2) and a positive lens(fig 1, r2-r3), said second lens group consists of a negative single lens(fig 1, r7-r8), a negative single lens(fig 1, r9-r10), and a positive single lens(fig 1, r11-r12); the third lens group consists of three lenses, a positive lens(fig 1, r15-r16), a positive lens(fig 1, r17-r18) and a negative lens(fig 1, r18-r19); $v21 < 40$ (embodiment 1, r7-r8). Mihara does not disclose the third lens group has at least one aspherical surface therein. However, Mukaiya et al. discloses the third lens group has at least one aspherical surface therein(table 1, r18). It would have been obvious to one skilled in the art at the time of the invention to place an aspherical surface on a lens in the third lens unit as shown by Mikaiya et al., in the lens system of Mihara, since as shown by Mukaiya et al. aspherical surfaces are commonly

placed on lens surfaces in the third lens group of a lens system so as to correct for aberrations.

Regarding claim 46, Mihara discloses, in order from an object side of the zoom lens system: a first lens group having positive refracting power(fig 1, Gr1); a second lens group that has negative refracting power and moves(col 2, lines 57-60) from an object side to an image plane side of said system during zooming from a wide-angle end to a telephoto end of the system(fig 1, Gr2); a third lens group having positive refracting power(fig 1, Gr3); and a fourth lens group that has positive refracting power and is movable during zooming(fig 1, Gr4 and col 2, lines 62-66), wherein: the first lens group comprises two lenses, a negative lens(fig 1, r1-r2) and a positive lens(fig 1, r2-r3), said third lens group has three lenses, a positive lens(fig 1, r15-r16), a positive lens(fig 1, r17-r18) and a negative lens(fig 1, r18-r19), $v21 < 40$ (embodiment 1, r7-r8). Mihara does not disclose the third lens group has at least one aspherical surface therein. However, Mikaiya et al. discloses the third lens group has at least one aspherical surface therein(table 1, r18). It would have been obvious to one skilled in the art at the time of the invention to place an aspherical surface on a lens in the third lens unit as shown by Mukaiya et al., in the lens system of Mihara, since as shown by Mukaiya et al. aspherical surfaces are commonly placed on lens surfaces in the third lens group of a lens system so as to correct for aberrations.

Regarding claim 49, Mihara discloses, in order from an object side of the zoom lens system: a first lens group having positive refracting power(fig 1, Gr1); a second lens group that has negative refracting power and moves(col 2, lines 57-60) from an

object side to an image plane side of said system during zooming from a wide-angle end to a telephoto end of the system(fig 1, Gr2); a third lens group having positive refracting power(fig 1, Gr3); and a fourth lens group that has positive refracting power and is movable during zooming(fig 1, Gr4 and col 2, lines 62-66), wherein: the first lens group comprises two lenses, a negative lens(fig 1, r1-r2) and a positive lens(fig 1, r2-r3), the fourth lens group has a surface with a stronger curvature on an object side thereof than on an image side thereof(fig 1, r23-r24), the third lens group has three lenses, a positive lens(fig 1, r15-r16), a positive lens(fig 1, r17-r18) and a negative lens(fig 1, r18-r19), v21 < 40 (embodiment 1, r7-r8). Mihara does not disclose the third lens group has at least one aspherical surface therein. However, Mukaiya et al. discloses the third lens group has at least one aspherical surface therein(table 1, r18). It would have been obvious to one skilled in the art at the time of the invention to place an aspherical surface on a lens in the third lens unit as shown by Mukaiya et al., in the lens system of Mihara, since as shown by Mukaiya et al. aspherical surfaces are commonly placed on lens surfaces in the third lens group of a lens system so as to correct for aberrations.

Claims 42, 60–62, 67, 71/42, 72/42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanka(U.S. Patent No. 4,842,385) in view of Mukaiya et al.(U.S. Patent No. 6,178,049).

Regarding claim 42, Tanka discloses, in order from an object side of the zoom lens system: a first lens group having positive refracting power(fig 3, B1); a second lens group that has negative refracting power and moves(fig 3, B2) from an object side to an

image plane side of said system during zooming from a wide-angle end to a telephoto end of the system(fig 2); a third lens group having positive refracting power(fig 3, B3); and a fourth lens group that has positive refracting power and is movable during zooming(fig 2, fig 3, B4)), wherein: the first lens group comprises two lenses, a negative lens(fig 3, r1-r2) and a positive lens(fig 3, r2-r3), said third lens group consists of three lenses, a positive lens(fig 3, r9-r10), a positive lens(fig 3, r11-r12) and a negative lens(fig 3, r12-r13). Tanka does not disclose the third lens group has at least one aspherical surface therein. However, Mukaiya et al. discloses the third lens group has at least one aspherical surface therein(table 1, r18). It would have been obvious to one skilled in the art at the time of the invention to place an aspherical surface on a lens in the third lens unit as shown by Mukaiya et al., in the lens system of Tanka, since as shown by Mukaiya et al. aspherical surfaces are commonly placed on lens surfaces in the third lens group of a lens system so as to correct for aberrations.

Regarding claim 60, Tanka discloses, in order from an object side thereof,a positive first lens group having of two lenses(fig 3, B1), a negative lens(fig 3, r1-r2) and a positive lens(fig 3, r2-r3); a negative second lens group(fig 3, B2) having, in order from an object side thereof, a negative lens convex on an object side thereof(Fig 3, r4), a negative lens concave on an image side thereof(fig 3, r6-r7) and a positive lens convex on an object side thereof(fig 3, r7-r8); a positive third lens group(fig 3, B3) having, in order form an object side thereof, a positive single lens convex on an object side thereof(fig 3, r15-r16) and a doublet having a positive lens convex on an object side thereof(fig 3, r11-r12) and a negative lens concave on an image side thereof(fig 3, r12-

r13), and a fourth lens group(fig 3, B4) having one positive single lens convex on an object side thereof(fig 3, r15-r16), wherein at least the second, third and fourth lens groups move for zooming from a wide-angle end to a telephoto end of said zoom lens system, the second lens group moves toward the image side at the telephoto end rather than at the wide angle end, and the third lens group moves toward the object side at the telephoto end rather than at the wide-angle end(fig 2). Tanka does not disclose the third lens group has at least one aspherical surface therein. However, Mukaiya et al. discloses the third lens group has at least one aspherical surface therein(table 1, r18). It would have been obvious to one skilled in the art at the time of the invention to place an aspherical surface on a lens in the third lens unit as shown by Mukaiya et al., in the lens system of Tanka, since as shown by Mukaiya et al. aspherical surfaces are commonly placed on lens surfaces in the third lens group of a lens system so as to correct for aberrations.

Regarding claims 61, 62, Tanka discloses in order from an object side of said system: a first lens group having positive refracting power(fig 3, B1); a second lens group(fig 3, B2) that has negative refracting power and moves from an object side to an image plane side of said system during zooming from a wide-angle end to a telephoto end of said system(fig 2, B2); a third lens group(fig 3, B3) that has positive refracting power and is movable during zooming(fig 3, B4); and a fourth lens group that has positive refracting power and is movable during zooming(Fig 2, B4'), wherein: said first lens group consists of two lenses(fig 3, r1-r3), a negative lens(fig 3, r1-r2) and a positive lens(fig 3, r2-r3), the third lens group(fig 3, B3) has three lenses(fig 3, r9-r13), a positive

lens(fig 3, r9-r10), a positive lens(fig 3, r11-r12) and a bi-concave negative lens(fig 3, r12-r13). Tanka does not disclose the third lens group has at least one aspherical surface therein. However, Mikaiya et al. discloses the third lens group has at least one aspherical surface therein(table 1, r18). It would have been obvious to one skilled in the art at the time of the invention to place an aspherical surface on a lens in the third lens unit as shoan by Mukaiya et al., in the lens system of Tanka, since as shown by Mukaiya et al. aspherical surfaces are commonly placed on lens surfaces in the third lens group of a lens system so as to correct for aberrations.

Regarding claims 67, Tanka discloses in order from an object side of said system: a first lens group having positive refracting power(Fig 3, B1); a second lens group that has negative refracting power(fig 3, B1) and moves from an object side to an image plane side of said system during zooming from a wide-angle end to a telephoto end of said system(fig 2); a third lens group having positive refracting power(fig 3, B3); and a fourth lens group(fig 3, B4) that has positive refracting power and is movable during zooming(fig 2), wherein: said first lens group consists of two lenses, a negative lens(fig 3, r1-r2) and a positive lens(fig 3, r2-r3), said third lens group comprises three lenses, a positive lens(fig 3, r9-r10), a positive lens(fig 3, r11-r12) and a negative lens(fig 3, r12-r13), IF3/F4I = .6(table 1). Tanka does not disclose the third lens group has at least one aspherical surface therein. However, Mukaiya et al. discloses the third lens group has at least one aspherical surface therein(table 1, r18). It would have been obvious to one skilled in the art at the time of the invention to place an aspherical surface on a lens in the third lens unit as shown by Mukaiya et al., in the lens system of

Tanka, since as shown by Mukaiya et al. aspherical surfaces are commonly placed on lens surfaces in the third lens group of a lens system so as to correct for aberrations.

Regarding claim 71/42, Tanka discloses the third lens group moves constantly from the image plane side to the object side during zooming from the wide-angle end to the telephoto end(fig 2).

Regarding claim 72/42, Tanka discloses the second lens group moves constantly from the object side to the image plane during zooming from the wide-angle end to the telephoto end(fig 2).

Claims 64, 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Misaka(U.S. Patent No. 5,859,729) in view of Mukaiya et al.(U.S. Patent No. 6,178,049).

Regarding claim 64, Misaka discloses in order from an object side of said system: a first lens group having positive refracting power(fig 1, L1); a second lens group(fig 1, L2) that has negative refracting power and moves from an object side to an image plane side of said system during zooming from a wide-angle end to a telephoto end of said system(fig 1); a third lens group that has positive refracting power(fig 1, L3); and a fourth lens group that has positive refracting power and is movable during zooming(Fig 1, L4'), wherein: said first lens group consists of two lenses(fig 1, r1-r3), a negative lens(fig 1, r1-r2) and a positive lens(fig 1, r2-r3), the second lens group has at least two lens(fig 1, r4-r5, r6-r7); the third lens group(fig 1, B3) has two lenses(fig 1, 10-12), a positive lens(fig 1, r10-r11), a negative lens(fig 1, r11-r12), and $0.6 < | F2/F3) <$

1(col 10, equations 2a, 3). Misaka does not disclose the third lens group has at least one aspherical surface therein. However, Mukaiya et al. discloses the third lens group has at least one aspherical surface therein(table 1, r18). It would have been obvious to one skilled in the art at the time of the invention to place an aspherical surface on a lens in the third lens unit as shown by Mukaiya et al., in the lens system of Misaka, since as shown by Mukaiya et al. aspherical surfaces are commonly placed on lens surfaces in the third lens group of a lens system so as to correct for aberrations.

Regarding claim 65, Misaka discloses in order from an object side of said system: a first lens group having positive refracting power(fig 1, L1); a second lens group(fig 1, L2) that has negative refracting power and moves from an object side to an image plane side of said system during zooming from a wide-angle end to a telephoto end of said system(fig 1); a third lens group that has positive refracting power(fig 1, L3); and a fourth lens group that has positive refracting power and is movable during zooming(Fig 1, L4'), wherein: said first lens group consists of two lenses(fig 1, r1-r3), a negative lens(fig 1, r1-r2) and a positive lens(fig 1, r2-r3), the second lens group has at least three single lens(fig 1, r4-r5, r6-r7, r8-r9); the third lens group(fig 1, B3) has two lenses(fig 1, 10-12), a positive lens(fig 1, r10-r11), a negative lens(fig 1, r11-r12), a negative lens(fig 1, r12-r13), and $0.6 < | F2/F3) < 1$(col 10, equations 2a, 3). Misaka does not disclose the third lens group has at least one aspherical surface therein. However, Mukaiya et al. discloses the third lens group has at least one aspherical surface therein(table 1, r18). It would have been obvious to one skilled in the art at the time of the invention to place an aspherical surface on a lens in the third lens unit as

shown by Mukaiya et al., in the lens system of Misaka, since as shown by Mukaiya et al. aspherical surfaces are commonly placed on lens surfaces in the third lens group of a lens system so as to correct for aberrations.

Allowable Subject Matter

Claims 1, 43, 47, 48, 50-59, 63, 66, 68-70, 71/ 1, 43, 45-47, 56-59, 72/ 1, 43, 45-47, 56-59 are allowed.

The following is an examiner's statement of reasons for allowance: The prior art taken either singularity or in combination fails to anticipate or fairly suggest the limitations of the independent claim, in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claim 1, 43, 47, 53-58, 63, 66, 68, 69, with the important features being; the first lens group having a single positive lens and meeting the mathematical limitation pertaining to the Abbe's number; the fourth lens group having a single positive lens and meeting the mathematical limitation pertaining to the Abbe's number; the third lens group has a positive single lens convex on an object side and a doublet having a positive lens convex on the object side and a negative lens concave on the image side and meeting the mathematical limitation pertaining to the Abbe's number; the mathematical limitation pertaining to the Abbe's number and the focal length of the second and third lens groups: the mathematical limitation pertaining

to the Abbe's number and the movement of the second and third lens groups; the mathematical limitation pertaining to the Abbe's number and the composite focal length of the third and fourth lens groups; the third lens group consisting of, in order from the object side, a double convex positive lens and a double consisting of a positive meniscus lens convex on the object side and a negative meniscus lens with the mathematical limitation pertaining to the Abbe's number; the specific order and shape of the lenses in the third and fourth lens groups; the mathematical limitation pertaining to the radius of the image circle as related to the composite focal length of the third and fourth lens group; the mathematical limitation pertaining to the lateral magnification; . Therefore claims 1, 43, 47, 48, 50-59, 63, 66, 68-70, 71/ 1, 43, 45-47, 56-59; 72/1, 43, 45-47, 56-59 are allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Thompson whose telephone number is (703) 305-0881. If the examiner can not be reached his supervisor, Georgia Epps, can be reached on (703) 308-4883.

T.J.T.

6/30/03